

Yilin Wang

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Education

- Sept. 2010-July, 2016 Institute of Physics, CAS Ph.D. in Theoretical Physics
- Sept. 2006-July, 2010 Renmin University of China B. Sc. in Physics

Fields of Research Interest

- Study the electronic structure and magnetism of strongly correlated electronic materials by using Density Functional Theory plus Dynamical Mean-Field Theory (DFT+DMFT) by using DFT plus Gutzwiller variational method (DFT+Gutzwiller)
- Develop software package of CTQMC, DFT+DMFT software package and DFT+Gutzwiller software package
- Calculate theoretical spectroscopies such as resonant X-ray scattering

Research Outputs

- Use the DFT+Gutzwiller method to study a [111] bilayer heterostructure of LaCoO_3 and find a stable quantum anomalous Hall phase
- Use the DFT+Hartree Fock method to study the magnetism of $\text{Eu}_2\text{Ir}_2\text{O}_7$ and find multipolar effects in this material
- Develop an open source “Interacting Quantum Impurity Solver Toolkit (iQIST)” software package (<https://bitbucket.org/wangyilin/iqist>), which implements the Hybridization expansion version of Continuous-Time Quantum Monte Carlo (HYB-CTQMC) solver and a lot of tools for pre- and post-process

Academic Activities

- Mar. 3-7, 2014 and Mar. 2-6, 2015 and Mar. 14-18, 2016 Attend the “March Meeting” hosted by the American Physical Society and give oral presentations
- May 5-Jun. 6, 2014 Visit Prof. Gian-Marco Rignanes in Université Catholique de Louvain (UCL), Belgium.
- Feb. 28-Mar. 13, 2016 Visit Prof. Liang Fu in MIT, USA

Skills

- I am very familiar with the Unix/Linux operating system, and skilled at massively parallel software development by using Fortran, C/C++, Python, MPI, OpenMP, I have many experiences in developing large scientific software.
- I am skilled at using first-principles softwares, such as VASP, Wien2k, abinit, quantum espresso

Awards

- December, 2014 Scholarship of Institute of Physics, CAS
- December, 2013 Scholarship of Institute of Physics, CAS
- May, 2013 “Outstanding Student” of Institute of Physics, CAS
- December, 2012 Scholarship of Institute of Physics, CAS
- September, 2006-July, 2010 Scholarship of Renmin University of China, Zeng Xianzi
Scholarship, Outstanding Graduates of Universities in Beijing

Publications

- Li Huang, **Yilin Wang**, Lei Wang, and Philipp Werner, Detecting phase transitions and crossovers in Hubbard models using the fidelity susceptibility, Phys. Rev. B 94, 235110 (2016)
- Guangxi Jin, **Yilin Wang**, Xi Dai, Xinguo Ren, and Lixin He, Strong charge and spin fluctuations in $\text{La}_2\text{O}_3\text{Fe}_2\text{Se}_2$, Phys. Rev. B 94, 075150 (2016)
- **Yilin Wang**, Li Huang, Liang Du, Xi Dai, Doping-driven orbital-selective Mott transition in multi-band Hubbard models with crystal field splitting, Chin. Phys. B, 25 (3):037103 (2016)
- **Yilin Wang**, Zhijun Wang, Zhong Fang, Xi Dai, Interaction-induced quantum anomalous Hall phase in (111) bilayer of LaCoO_3 , Phys. Rev. B 91, 125139 (2015)
- Li Huang, **Yilin Wang**, Zi Yang Meng, Liang Du, Philipp Werner, Xi Dai, iQIST: An open source continuous-time quantum Monte Carlo impurity solver toolkit, Comput. Phys. Commun. 195, 140 (2015)
- Quan-Sheng Wu, **Yi-Lin Wang**, Zhong Fang, Xi Dai, Acceleration of the Stochastic Analytic Continuation Method via an Orthogonal Polynomial Representation of the Spectral Function, Chinese Phys. Lett. 30, 090201 (2013)
- Li Huang, **Yilin Wang**, and Xi Dai, Pressure-driven orbital selective insulator-to-metal transition and spin-state crossover in cubic CoO , Phys. Rev. B 85, 245110 (2012)
- Li Huang, and **Yilin Wang**, Dynamical screening in strongly correlated metal SrVO_3 , EPL 99, 67003 (2012)